



KapStone Longview Mill

May 30, 2017

Rule 408 Confidential Settlement Discussion

Pulp & Paper NESHAP: Subpart S

Background

- Promulgated in 1998
 - Integrated rule addressing air emissions and water discharges
 - Revised in 1999, 2000, 2003 and 2012
- Subpart S delegated to Ecology on February 20, 2001
- Requires the collection and treatment of hazardous air pollutants (HAPs) from different equipment systems at pulp and paper mills.
 - e.g. low volume high concentration system, various knoter or screen systems, and pulp washing systems
 - Specifies dozens of points where emissions must be captured and routed to a thermal destruction device, such as a boiler or a standalone incinerator
- Not all emissions of HAPs must be collected under Subpart S
 - EPA guidance (e.g., Q&As, determination letters, BIDs, preambles) explained how agency interpreted requirements
 - Determine MACT floor and standards based on what is being done at best performers

Pulping Process: Digesters & Washers

Background

- Pulp mills take wood chips or sawdust and cook them to extract the fibers (cellulose) that are then used to form paper or paperboard
- The cooking process involves pressurized “digesters”
 - Typically use one of several chemical processes to separate the fibers from all the other components of woody material (chips or sawdust)
 - Volatile HAPs (VHAPs) come off digesting process
 - There are continuous digesters (e.g., M&D Digesters) and batch digesters
 - Batch digesters involve opening digester (uncapping) and adding or removing materials
 - Continuous digesters are inherently lower emitting
- Once pulp comes out of digester, it is washed to remove contaminants and residual chemicals
 - Washing has potential for generating VHAPs
 - Conventional washer was a large vacuum drum washer open to atmosphere
 - Newer low emitting washers (e.g., diffusion washers and chemiwashers) use enclosed process and route VHAPs to controls (via filtrate tank)

M&D Digester Inlet Valve

Background

- Subpart S had an April 16, 2001 compliance deadline
- Required to control emissions from digester
- Pre-2000: Mill designed two part compliance strategy for controlling M&D Digester VHAPs:
 - Draw VHAPs off the top of the digester pulping surface to NCG line/controls
 - Still effectively controlling digester emissions today
 - Install condensing screw conveyor with scrubber at inlet where sawdust enters digester
 - This did not work—resulted in serious plugging/blowback issues
 - Mill concerned about April 2001 deadline
 - Reached out to EPA in April 2000 letter
 - Prior to Feb 20, 2001 delegation of Subpart S to Ecology
- Aug 2000: EPA visited mill to discuss compliance options in relation to ongoing dialog about granting compliance extension

M&D Digester Inlet Valve

Background

- Aug 18, 2000: Mill submitted a compliance extension request to EPA
 - Detailed discussion of compliance options
 - #1 option was to replace inlet valve with a pocket feeder rotary inlet valve
 - Proposed running trial and “If low emissions are verified, we would have three of our valves converted... If this option succeeds, we would be in compliance by April 16, 2001...”
- Aug 31, 2000: EPA granted mill extension to explore M&D digester compliance options subject to requirement to provide monthly progress reports

M&D Digester Inlet Valve

Background

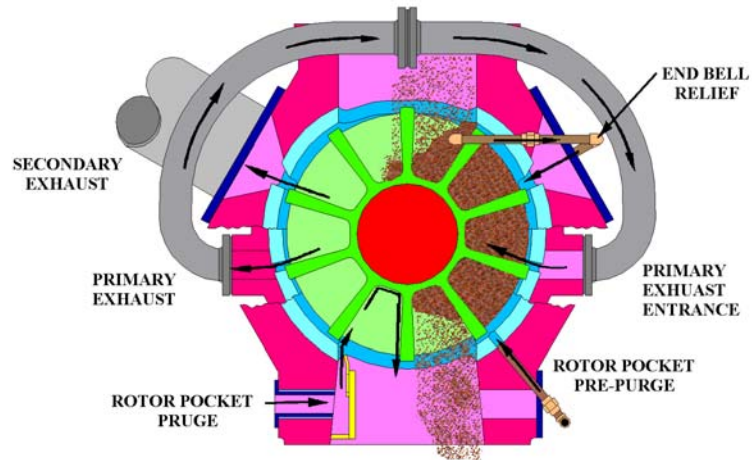
Monthly reports chronicle pilot testing of a rotary valve to replace the screw conveyor system

- Screw conveyor received unadulterated digester relief gases that then had to be scrubbed to reduce VHAPs
- Mill proposed to EPA a new compliance strategy utilizing rotary valve modified to inject clean steam into the valve “pockets” as they dumped sawdust and before they left the interface with the digester vessel
 - As explained to EPA in letter dated November 15, 2000:

We believe that use of the new style sawdust valve places us in a similar situation in that only fresh steam is applied to the rotary pocket inlet valve and emissions from the pocket purge system are fresh steam. The old style valve was incapable of efficient pocket purging and, as a result, did trap and emit process vapors. The new valve does not trap process vapors.

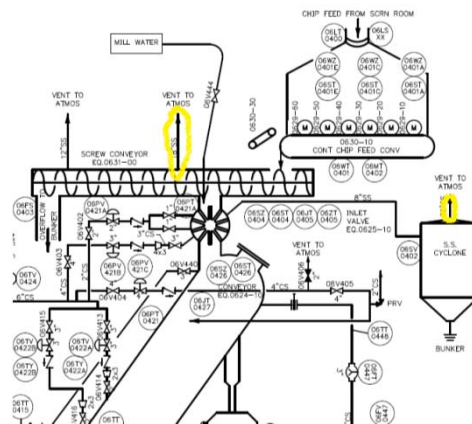
M&D Digester Inlet Valve

Diagram



M&D Digester Inlet Valve

Diagram



M&D Digester Inlet Valve

Background

December 12, 2000 monthly report letter to EPA details discussion between EPA staff and mill about mill's basis for concluding that what was emitted from the modified rotary valve was "essentially 100% fresh steam"

Our determination of what constitutes "essentially 100% fresh steam" begins with interpreting 40 CFR Part 63, Subpart S; specifically § 63.443 (d) (2) which describes allowable emissions from the discharge of a thermal oxidizer as 20 parts per million or less by volume, corrected to 10% oxygen on a dry basis. This is for a control device used to reduce the total HAP concentration from a LVHC source.

M&D Digester Inlet Valve

Background

December 12, 2000 monthly report letter to EPA also explains the critical role of the continuous draft taken off the digester and routed to the LVHC control system.

It is important to note that we establish and maintain this very low HAP concentration by actually establishing a flow of M&D continuous kraft sawdust digester vapors from the top of the digester body to the blow tank system which is connected to our mill closed vent collection system for all LVHC sources for incineration at either a lime kiln or a power boiler where the vapors are introduced into the flame zone (§63.443 (d) (4)).

The actual HAP control is the change in the process where we establish the flow of digester process vapors to the blow tank and into the closed vent collection system for treatment. The installation of the new valve allows an efficient pocket purge with fresh steam and leads to the conclusion that the pocket purge flow is an exempt stream since it was not EPA's intent to collect fresh steam streams. Information supporting this view of EPA's intent was related in the November 15th progress report letter.

M&D Digester Inlet Valve

Background

- Monthly summary reports continued to Kai Hon Shum at EPA through April 11, 2001 letter
 - Detailed discussions in each letter of implementation of modified rotary valve project based on approach outlined in November and December 2000 reports to EPA
 - Ecology cc'd on all communications
- Last four monthly summary reports to Ecology in letters dated from May 15, 2001 through August 13, 2001
 - Kai Hon Shum at EPA cc'd on all communications
 - Change in primary letter recipient reflects delegation of Subpart S to Ecology in Spring 2001
- EPA clearly in lead agency role throughout the discussions

M&D Digester Inlet Valve

Background

August 13, 2001 Report to Ecology and EPA:

We are pleased to report that #3 M&D continuous kraft sawdust digester has its new style, Model 77 rotary inlet pocket feeder valve installed. It also has the digester body vapor space vent line and flow control valve to the #6 blow tank installed. Spot testing for hazardous air pollutants (HAPs) in the pocket feeder purge cyclone confirms proper operation. Emissions testing results were very similar to previous testing at #4 M&D continuous kraft sawdust digester with an average of about 8 ppm total HAPs.

With the completion of this installation, both #3 and #4 M&D continuous kraft sawdust digesters are now compliant with the applicable sections of 40 CFR Part 63, Subpart S, National Emission Standards for Hazardous Air Pollutants applicable to the Pulp and Paper Industry. We have developed operational instructions for the M&D continuous kraft sawdust digesters and will record key parameters.

M&D Digester Inlet Valve

Background

- July 3, 2001: Ecology sent letter to EPA and mill confirming compliance approach:

LVF ordered a more modern pocket feeder (model 77) and installed the unit on #4 M&D. Information submitted on May 15, 2001 demonstrated total HAPs emissions were <20 ppm when #4 M&D was properly operated. LVF identified efficient purging of digester vapors from the pockets of the pocket feeder as necessary to prevent HAPs emissions from the M&D. Proper operation and maintenance includes maintaining a flow of M&D vapors from the top of the digester body to the blow tank system. The blow tank system is connected to the LVHC closed vent system.

Ecology agrees no treatment of emissions from the model 77 feed system at the M&D units is necessary when the units are properly operated and maintained. LVF is reminded that proper operation and maintenance is required at all times per WAC 173-405-040(10).

- Sept 13, 2001: Ecology sent EPA and mill a follow-up letter confirming that compliance extension period was terminated based on mill's demonstration of the No.4 M&D digester being in compliance with Subpart S.

M&D Digester Inlet Valve

Background

- KapStone routinely tests the two fresh steam vents associated with the operation of the No.4 M&D Digester inlet valve
- Method 21 VOC results of the last three years:

	Vent 1	Vent 2
2014	1	1
2015	13	14
2016	3	3

- VHAP testing in 2016 were 7 ppm and 3 ppm
 - Similar to testing in 2000 to validate compliance
- Clearly valve is being operated consistent with approach developed with EPA in 2000

M&D Digester Inlet Valve

Positions

EPA's position:

- Not all emissions from the No. 4 M&D Sawdust Digester were routed to a control device meeting the requirements of 40 C.F.R. § 63.443(d). Digester gases were vented from the rotary valve feeding the M&D Sawdust Digester to either a cyclone or screw conveyor/metering screw, both of which are open to the atmosphere.

KapStone's position:

- The No.4 M&D Sawdust Digester is vented into a closed vent system and routed to a control device
- The steam released from the rotary valve is "essentially 100% fresh steam" which was determined by EPA to not require control
 - Exclusively fresh steam used to pressurize valve pocket and to purge pocket

M&D Digester Inlet Valve

Positions

EPA's position:

- As provided in 40 C.F.R. § 63.458(c)(1), Ecology did not have authority to approve alternatives to the requirements of 40 C.F.R. §§ 63.440, 63.443 through 63.447, and 63.450

KapStone position:

- Initial determination and discussion was all with EPA
- Ecology's determination that the rotary valve vents "fresh steam" was not an approval of alternative requirements; it was an exercise of their implementation authority delegated by EPA per 40 C.F.R. § 63.458(a)
- Even if Ecology's determination was approval of an alternative control, 40 C.F.R. § 63.458 was not adopted until June 23, 2003—2 years after EPA and Ecology concurred with the digester valve approach
 - 6/23/2003 Fed Reg says that if an alternative control was approved prior to adoption of the 2003 rules, the state should let EPA know

M&D Digester Inlet Valve

Positions

EPA's position:

- As provided in 40 C.F.R. § 63.458(c)(1), Ecology did not have authority to approve alternatives to the requirements of 40 C.F.R. §§ 63.440, 63.443 through 63.447, and 63.450

KapStone position:

- Ecology's determination that the rotary valve vents "fresh steam" was not an approval of alternative requirements; it was an exercise of their implementation authority delegated by EPA

"If EPA approves this proposal, Ecology and the four agencies will have primary implementation and enforcement responsibility for the adopted NESHAP regulations. This means that if approved, sources subject to the delegated standards would send notifications and reports to these agencies (and a copy to EPA Region 10, except for those sources within Ecology and SCAPCA's jurisdiction). Questions and compliance issues would also be directed to those agencies." 66 Fed. Reg. 35116-117 (July 3, 2001)

M&D Digester Inlet Valve

Positions

KapStone position (cont.):

"After a state or local agency has been delegated the authority to implement and enforce a NESHAP, the delegated state (in this case Ecology and the four locals) becomes the primary point of contact with respect to that NESHAP. Therefore, if EPA approves this proposal, regulated facilities would direct questions and compliance issues to these agencies. Additionally, all pending questions and compliance issues, even those which may currently be under consideration by EPA, will be resolved by Ecology or the appropriate local agency." 66 Fed. Reg. 35118 (July 3, 2001)

- Ecology properly exercised its authority to address a pending question
- Current interpretation different than initial EPA, Ecology and industry understandings

M&D Digester Inlet Valve

Positions

EPA's position:

- EPA's and Ecology's determination that the release of "essentially 100% fresh steam" from valve feeding digester is exempt from 63.443(a)(1)(i) is contrary to the rule and would require approval as an alternative

KapStone position:

- EPA previously determined that digester uncapping emissions were exempt from 63.443(a)(1)(i)
 - Only distinction between uncapping emissions and fresh purge steam from rotary valve is that the VHAP concentration in uncapping emissions is much higher

Q7. Do I have to control the emissions from my batch digesters when they are being uncapped? §63.443(a)(1)(i)

No. Digester uncapping processes are not subject to any requirements under the NESHAP. We did not cover the uncapping process because we are aware of only 2 mills that control uncapping emissions. Additionally, essentially all of the contents (pulp and digestion gases) of the batch digester are blown under pressure to the blow tank, and the digester is now at atmospheric pressure. If this is the case, controlling uncapping emissions would not be a cost-effective control option for existing or new

Questions about the Rotary Valve?

NSSC Chemi-Washer

Background: Conventional Washers

- Conventional pulp washer is a rotary vacuum drum washer
 - Washer drum rotates in a vat containing mix of pulp and liquor
 - Vacuum sucks a thick layer of pulp onto the mesh skin of the drum
 - Water sprays onto the pulp layer on drum
 - Water/liquor mixture separated and collected
 - Cleaned pulp layer scraped off by doctor blade and sent to next stage
- Rotary vacuum drum washers use a lot of water and exposed to atmosphere resulting in large emission potential
- Subpart S anticipated that they would be enclosed under negative pressure and emissions vented to closed vent system and then to incinerator
- Chemi-washer is a low flow washer system
 - Air circulates within a hood

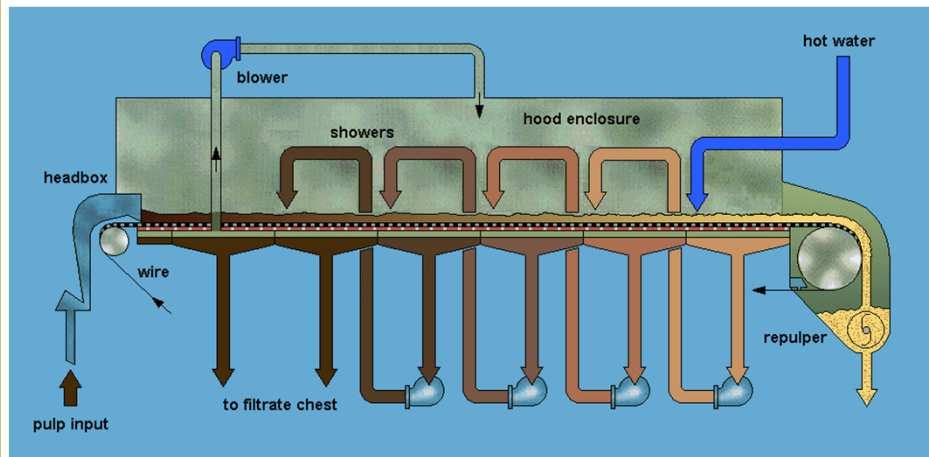
NSSC Chemi-Washer

Background: Low Flow Washers

- Diffusion and horizontal belt washers are newer generation of low flow pulp washers
 - In Subpart S development documents, EPA recognized the inherent environmental benefits of low flow washer systems
- A Chemi-Washer is a type of horizontal belt washer
 - Pulp passes through washer on a horizontal belt
 - Overhead showers rain down on pulp on the belt
 - Blower pulls air from under the belt (suction zone) and returns air on top of belt (beneath the hood)
 - Pressure differential between hood and suction zones causes liquor/water to pass through pulp and down into catch basin below the belt
 - The hood is nominally atmospheric pressure
 - VHAPs off washing process routed to filtrate chest and from there to incineration

NSSC Chemi-Washer

Diagram



NSSC Chemi-Washer

Picture



NSSC Chemi-Washer

Subpart S 1993 BID, EPA-453/R-93-050a Appendix A - Chemi-washer diagram

As shown in Figure A-15, the No. 4 washer is a seven stage counter current flow system, with fresh water being applied at stage seven. This washer system is called a chemiwasher (page A-32).

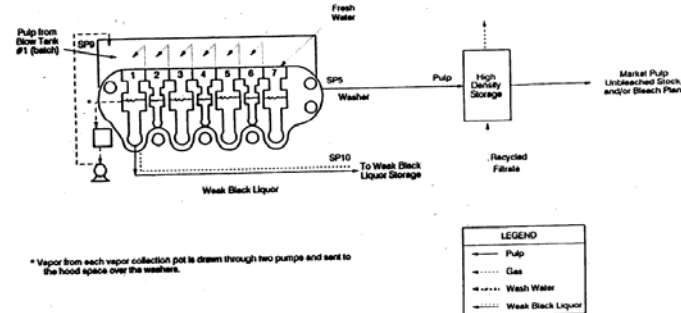


Figure A-15. No. 4 Washer at Site 3

NSSC Chemi-Washer

Applicability of Subpart S to Low Flow Washers

- EPA assessed applicability of pulp washing system requirements to diffusion and horizontal belt washers
- EPA distinguished in multiple places between “enclosures” and “enclosed”
- Section 5.1.1 Enclosure Costs
 - As shown in Table 5-1, the emission points that will require enclosures before an end-of-pipe control device can be used are the pulp washers, the knotters, and the screens/deckers. Enclosing these points reduces the volumetric flow rate typically associated with capture of the emissions and will increase the overall capture of VOC and HAP. Factors considered in estimating enclosure costs include the size of the enclosure, the materials of construction, and the need for equipment access. **It should be noted that some washer designs, such as diffusion washers, do not require enclosures due to their design.**

(Subpart S 1993 BID, EPA-453/R-93-050a; page 5-3)

NSSC Chemi-Washer

Applicability of Subpart S to Low Flow Washers

- Section 2.2.1.1.3 Brownstock Washing:
 - Washers such as the diffusion washer or horizontal belt washer are enclosed or have limited exposure to ambient air.
(Subpart S 1993 BID, EPA-453/R-93-050a; page 2-15)

NSSC Chemi-Washer

Leak Detection Applicability

- “The requirement for demonstration of negative pressure has been revised to apply only to enclosures and hoods. The requirement for demonstration of no detectable leaks has been revised to apply only to positive pressure systems or portions of systems. The EPA concluded that the leak detection requirements are necessary to verify that enclosures are collecting all emissions from applicable emission points in these systems. The EPA agrees with the commenters that leak detection for negative pressure systems is not useful since any leaks in the collection system will draw air into these systems.”
Subpart S 1997 BID, EPA-453/R-93-050b; page 4-47

NSSC Chemi-Washer

Clear Recognition of Positive Pressure Enclosures

Comment: One commenter (20,027) pointed out that the assumed closed vent system requirements for the pulping area are not practiced at any existing mill. The commenter stressed that brownstock washers could not be tightly sealed due to the need for frequent quality control sampling of brownstock. The commenter (20,027) reported that EPA overestimated the extent to which a brownstock washer can be enclosed and the amount of gas flow that will be conveyed to a combustion device.

Response: Information received from an industry survey (A-92-40, II-D-27) shows that several pulp mills have successfully enclosed brown stock washers (A-92-40, IV-B-8, IV-B-16). Based on this information, EPA has decided to keep the brownstock washer enclosure requirements in the final rule. The EPA does not intend to prevent pulp sampling activities with the enclosure requirement. Mills which have successfully enclosed brownstock washers have access areas to allow for pulp sampling. **At mills with negative pressure enclosures, access areas do not present emission leak concerns; however, access areas on positive pressure enclosures will still have to pass the leak test requirements.**

Subpart S 1997 BID, EPA-453/R-93-050b; page 5-19

NSSC Chemi-Washer

Compliance Program

- NSSC chemi-washer operates in a positive pressure enclosure that routes gases from washing process through the closed vent system to incineration
- NSSC chemi-washer covered under Leak Detection & Repair (LDAR) program to ensure it is maintained in leak free condition
 - Approach consistent with language in 1997 BID
 - When leaks detected, components are repaired or replaced consistent with LDAR requirements

NSSC Chemi-Washer

Positions

EPA's position:

- The NSSC Chemi-Washer is a "pulp washing system" as defined in 40 C.F.R. § 63.441 subject to NESHAP Subpart S. It is also an "enclosure" within the meaning of 40 C.F.R. §§ 63.443(c), 63.450(a) and (b), and 63.453(k), and has "enclosure openings" within the meaning of 40 C.F.R. §§ 63.450(b), and 63.453(k).

KapStone position:

- The NSSC Chemi-Washer is a "pulp washing system" that is enclosed and vented into a closed vent system and routed to a control device
- The NSSC Chemi-Washer hood is an integral part of its design and is subject to leak detection requirements

NSSC Chemi-Washer

Positions

EPA's position:

- During [EPA's] visit, steam was escaping from the couch roll on the bottom of the NSSC chemi-washer."

KapStone position:

- The steam escaping from the bottom of the NSSC Chemi-Washer is clean steam not subject to rule
- After pulp leaves wire, the wire is cleaned with hot water in the knock-off shower
 - This process is all within the enclosure and steam routed to filtrate tank
- Clean wire leaves enclosure saturated with clean hot water
- This clean hot water produces clean steam not associated with pulp washing system

NSSC Chemi-Washer

Positions

EPA's position:

- Visible emissions are evidence that the NSSC Chemi-Washer was not "enclosed and vented into a closed-vent system and routed to a control device" that meets the requirements of 40 C.F.R. § 63.450, as required by 40 C.F.R. § 63.443(b)(2) and (c).

KapStone position:

- Components of the closed-vent system used to comply with NESHAP Subpart S that are operated at positive pressure and located prior to a control device are required to be operated with no detectable leaks according to the requirements in §63.450(c)
- Current interpretation different than initial EPA and industry understandings

Questions about the NSSC Chemi-Washer?

Conclusions

Rotary Valve

- EPA worked closely with mill in 2000 to develop two part compliance strategy:
 - Emissions off top of digester are routed to incineration
 - Clean purge steam used in rotary valve pockets to maintain digester gases in digester and allow only essentially clean steam to be released to atmosphere
- Approach consistent with determination that uncapping emissions not subject to capture and control
- Region 10 cannot change long held position clearly documented in writing without notice and comment rulemaking

Conclusions

NSSC Chemi-Washer

- EPA encouraged use of low-flow pulp washers such as horizontal belt washers
- Recognized that the inherent design of these washers reduced emissions and makes them positive pressure enclosures
 - Functions as part of the closed vent system
- EPA specifically called out that they are subject to leak detection requirements, not negative pressure demonstration
- Region 10 cannot now suggest the NSSC chemi-washer is out compliance because it does not have a negative pressure enclosure around the positive pressure enclosure